

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The distribution of the average pressure for the month of July, 1923, as determined by observations taken at land stations on the coast and islands of the North Atlantic Ocean, was comparatively uniform, differing but slightly from the normal. The following figures show the average pressure at Greenwich Mean Noon, with approximate departures at a number of selected land stations. The barometric readings are in inches, and the normals were taken from the Pilot Chart.

St. Johns, Newfoundland, average 29.91, departure -0.06. Halifax, N. S., 29.98, +0.04. Nantucket, 30.01, +0.04. Hatteras, 30.01, -0.01. New Orleans, 30.02, +0.02. Turks Island, 30.10, +0.09. Bermuda, 30.20, +0.09. Horta, Azores, 30.33, +0.07. Swan Island, 29.92, +0.00. Lerwick, Shetland Islands, 29.85, +0.05. Valentia, Ireland, 29.99, +0.01. London, 30.01, +0.03.

According to the Pilot Chart, July is normally the quietest month of the year over the North Atlantic, and during the month under discussion winds of gale force were not reported on more than one day in any 5-degree square, with the following exceptions: Square between latitude 40° to 45°, longitude 55° to 60°, where they occurred on four days, the greatest number observed. Squares in latitude 30° to 35°, longitude 75° to 80°; latitude 40° to 45°, longitude 50° to 55°; latitude 50° to 55°, longitude 15° to 20°, where they were reported on two days.

Fog was unusually prevalent during the month and was reported on 20 days in the 5-degree square between latitude 40° to 45°, longitude 65° to 70°; it was reported on 16 days in the square immediately to the eastward and on 15 days between latitude 40° to 45°, longitude 45° to 50°. Fog was also more frequent than usual over the middle section of the steamer lanes and off the coast of Europe.

According to reports received, the weather during the first seven days of the month was comparatively featureless, with light to moderate winds over the entire ocean, although fog was unusually frequent. Charts VIII and IX show the conditions on the 8th and 9th, respectively, when an area of low pressure surrounded Newfoundland, with moderate gales in the southerly quadrants, as shown by the following storm logs.

British S. S. *Galtymore*:

Gale began on the 8th, wind SE. Lowest barometer 29.58 inches at 9.30 a. m. on the 8th, wind S., 7, in latitude 43° 45' N., longitude 50° 25' W. End on the 8th, wind S. Highest force of wind 8; shifts not given.

American S. S. *Hera*:

Gale began on the 9th, wind SW. Lowest barometer 29.97 inches at 4 a. m. on the 9th, wind SW., 5, in latitude 36° N., longitude 52° 40' W. End on the 9th, wind N. Highest force of wind 7; shifts SW.-N.

On the 9th there was a second LOW central near latitude 51° N., longitude 18° W., and northwesterly gales prevailed over a limited area between the 15th and 25th meridians. Storm log:

British S. S. *Baltic*:

Gale began on the 9th, wind W. Lowest barometer 29.60 inches at 5.30 a. m. on the 9th, wind W., in latitude 50° 23' N., longitude 17° 23' W. End on the 9th, wind WNW. Highest force of wind 8; steady W.

While the Greenwich mean noon observations on the 9th show moderate conditions off the coasts of South Carolina and Georgia, one vessel a short distance east of

Charleston reported a moderate gale that developed later in the day. Storm log:

American S. S. *Virginia*:

Gale began on the 9th, wind E. Lowest barometer 29.91 inches on the 9th, wind E., 6, in latitude 31° 40' N., longitude 78° 50' W. End on the 10th, wind NE. Highest force of wind 7; shifts NW-E.

From the 10th to the 16th another period of inactivity ensued, although a few vessels in widely scattered localities reported moderate gales without rendering storm logs.

On the 17th a moderate disturbance appeared central near latitude 45° N., longitude 57° W., with southwesterly gales over the region between the 40th and 45th parallels and 55th and 60th meridians. Storm log:

Danish S. S. *Virginia*:

Gale began on the 17th, wind SW. Lowest barometer 29.96 inches at midnight on the 17th, wind SSW., 10, in latitude 41° 30' N., longitude 56° 20' W. End on the 18th, wind N. Highest force of wind 10, SW.; shifts SW-N.

During the night of the 16th the Honduran S. S. *Hibueras* experienced a moderate gale as shown by following report:

At 7 p. m. on the 16th, in latitude 33° 10' N., longitude 73° 30' W. Barometer 29.97 inches, wind SW., 7. Weather partly cloudy. Heavy sea. At 7 a. m. on the 17th, barometer 29.97 inches. Wind SW., 5. Weather partly cloudy. [State of sea not given.]

On the 18th another moderate disturbance was encountered in the same general locality by the American S. S. *El Rio*. Report follows:

At 7 p. m. on the 18th, in latitude 33° 20' N., longitude 76° 40' W. Barometer 29.86 inches, wind NNE., 7. Weather, passing showers. Rough sea.

At 7 a. m. on the 19th, barometer 29.96 inches. Wind E., 5. Weather, passing showers. Rough NE. sea.

On the 20th there was apparently a disturbance somewhere north of Newfoundland, although it was impossible to locate it accurately on account of lack of observations. Storm log:

British S. S. *Kenbane Head*:

Gale began on the 20th, wind W., 8. Lowest barometer 29.19 inches at 4 a. m. on the 20th, wind SW., in latitude 52° 30' N., longitude 49° W. End on the 21st, wind W. Highest force of wind 9, W.; shifts SW-W.

At Greenwich mean noon on the 21st moderate weather prevailed over the entire ocean, although later in the day the American S. S. *Minnekahda* encountered a moderate gale, as shown by following storm log:

Gale began on the 21st, wind SW. Lowest barometer 29.71 inches at 9 a. m. on the 21st, wind SW., 7, in latitude 40° 25' W., longitude 59° 58' W. End on the 21st. Highest force of wind 8; steady SW.

From the 22d to the 28th there was another period of comparatively mild weather, accompanied by considerable fog. On the 29th two fairly well developed areas of low pressure made their appearance. The first was central near Nantucket, and the second surrounded Ireland. By the 30th the center of the western LOW was near Halifax, and that of the eastern somewhere in the North Sea.

At Greenwich mean noon on the 30th vessels a short distance east of Halifax experienced westerly gales, although no storm logs were received. The American S. S. *Coelleda* also reported a westerly gale off the European coast as shown by the following storm log:

Gale began on the 30th, wind W. Lowest barometer 29.49 inches at 7 a. m. on the 30th, wind W., 7, in latitude 50° 58' N., longitude 12° 30' W. End at 3 p. m. on the 31st, wind WNW. Highest force of wind 8, WNW.; shifts 2 points to N.

By the 31st the western disturbance had apparently disappeared while northwesterly gales were encountered

near the 50th parallel between the 10th and 20th meridians. Storm log:

American S. S. Mongolia:

Gale began on the 31st, wind WNW. Lowest barometer 29.46 inches on the 31st, wind NW. 8, in latitude 49° 28' N., longitude 13° 30' W. End on the 31st, wind NW. Highest force of wind 8, NW.; steady from NW.

The American S. S. *Leviathan*, while in mid-ocean reported a moderate gale from noon to midnight on the 31st. Storm log:

Gale began on the 31st, wind NE. Lowest barometer 29.71 inches at 1 p. m. on the 31st, wind NE., 8, in latitude 44° 25' N., longitude 37° 29' W. End on the 31st, wind NE. Highest force of wind 8; steady NE.

NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

The unusual activity which characterized the weather of the North Pacific Ocean in June gave place for the most part to typical midsummer conditions in July. Gales in the higher latitudes became infrequent and there was a decrease in the number of typhoons. Fog increased in the regions where it commonly forms in the summer season.

Pressure in the Aleutian area averaged very close to normal, as shown by observations at Dutch Harbor. In July pressure here reaches its highest point for the year, the monthly average of available observations being 30.02 inches as compared with an annual average of 29.76 inches. In the month under consideration pressure was below normal generally throughout the first half of the month and again at the close, with a period of high pressure from the 16th to 26th. The highest reading, 30.40 inches, was recorded on the 21st; the lowest, 29.70, on the 5th. Absolute range 0.70 inch. At Midway Island pressure continued below normal, the deficiency being some 0.09 inch. The normal here for July is 30.10 inches. The highest reading for the month, 30.12, occurred on the 23d; the lowest, 29.80, on the 5th. At Honolulu pressure was approximately normal, or 30.01, for the p. m. observations. The highest reading, 30.07, was recorded on the 7th; the lowest, 29.86, on the 13th. Precipitation at Honolulu was only 0.25 inch, the month being the third driest July on record. This follows the driest June of record, when only 0.17 inch fell. The normal precipitation for July is 1.19 inches; for June, 0.92 inch.

The North Pacific high-pressure area was very constant throughout the month. During the periods of low pressure at Dutch Harbor its center lay between the Hawaiian Islands and the Gulf of Alaska. As pressure rose in mid-ocean on the 16th the anticyclone became elongated, with the major axis lying east and west and the center shifted some 10° to 15° to the westward.

Reports at hand indicate that low pressure prevailed over the waters of the Far East throughout the month.

As the month opened the most important feature of the weather was the typhoon in the China Sea. This storm had appeared on June 27 about 300 miles to the east of southern Luzon and had traversed the northern part of that island on the 29th, doing considerable damage. Its path there inclined to the northward and it entered China, apparently, during the night of July 2-3, eastern time, a few miles west of Macao, where also it was reported to have caused much damage.

On the 2d a depression appeared to the northwestward of Midway Island, whence it moved during the 3d and

4th in a northeasterly direction, increasing somewhat in intensity, and on the evening of the 5th was centered over Dutch Harbor, where the barometer registered 29.70 inches. Vessels in the vicinity reported moderate to fresh gales. Coincident with this depression a disturbance over Japan caused fresh to strong shifting gales in near-by waters.

On the 5th and 6th violent local storms prevailed off the coast of southern Mexico and Guatemala. The following report of these storms has been received from the American S. S. *Ethan Allen*, Capt. W. H. Stanford, San Pedro for Balboa. Second Officer John S. Weldon states that the first indication of these two gales, or squalls, was a gathering of heavy black clouds on the horizon in the direction from which the wind came. These moved very rapidly and when nearly overhead the wind struck. From the time that the clouds first appeared to the time when wind struck was not over 30 minutes, the wind coming in little puffs from all directions. There was no gradual increase in force of wind—it struck with full force. The first gale occurred from 3.30 a. m. to 9 a. m. of the 5th in 14° 17' N., 94° 10' W.; the wind direction was ESE. to E. and it attained force 11, E. The lowest barometer, 29.91, corrected, occurred at 4 a. m. This blow was accompanied by thunder and severe lightning, and heavy rain fell at times.

The second gale occurred between 12.40 a. m. and 5 a. m. of the 6th, in 12° 50' N., 90° 40' W. The wind blew steadily from ENE., reaching force 12. The lowest barometer was the same as in the preceding storm. There was severe lightning but very little thunder. Light to moderate rain fell throughout.

These sudden, short-lived gales continued until at least the middle of the month. The American S. S. *Charles Pratt*, Capt. Geo. E. Bridgett, also from San Pedro for Balboa, experienced one on the 8th, when between Chamela Bay and Manzanillo; another on the 11th, in 15° 30' N., 97° 45' W.; and a third on the 14th beginning at 10° 45' N., 88° 20' W. According to the descriptions given by First Officer H. Thorsen, these gales were not so violent as those encountered by the *Ethan Allen*, the wind attaining forces 7, 9, and 8, respectively, in the three.

The American S. S. *Ipswich* also reported a severe electrical storm off Acapulco during the night of the 15th, followed by heavy wind and rain squalls.

On the 12th the British S. S. *Eburna*, Capt. D. O. Evans, San Pedro for Yokohama, experienced a southwesterly gale in 33° 58' N., 165° W., due to a trough-like depression extending from Alaska to the neighborhood of Midway Island. Second Officer H. W. Elgat states:

At 8 a. m. (civil time) experienced a very heavy west swell, wind at times being SSW., gale force. Wind and sea increased toward midday, when the wind attained its highest velocity (10, SSW.). At 2 p. m. wind shifted to SW. and commenced to decrease. At 5 p. m. wind shifted to W. by S., sea and wind decreasing. Midnight, wind W., with heavy westerly swell. Heavy rain squalls throughout. Lowest barometer 29.74 inches, at 8 a. m. of 12th.

On the 20th and 21st moderate to fresh southerly to southeasterly gales were experienced by several ships in mid-ocean. These gales occurred on the western side of the North Pacific high and in the front of a depression that advanced from the region of the Bonin Islands. This depression apparently dissipated on the 22d in the region southeast of Kamchatka.

Reports at hand indicate that during the last week of July a series of depressions moved northeastward over Japan and adjacent waters and also point to the formation